

Simplifying Theories of Creativity

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Simplifying Theories of Creativity and Revisiting the Criterion Problem

A Comment on Simonton's (2009) Hierarchical Model of Domain-Specific Disposition,
Development, and Achievement

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ABSTRACT—Simonton's (2009, this issue) hierarchical model represents a useful contribution to studies of creativity and eminence. Simonton breaks all kinds of new ground by extrapolating the hierarchy to the arts and humanities, interpolating it within disciplines, and relating it to family background and disposition. This commentary poses a few questions with the hierarchical model and proposes an alternative. I also introduce a candidate for a simple theory of creativity that focuses on a universally shared capacity. This simple theory complements Simonton's hierarchical view, though his applies best to actual performance and the simple theory of creativity applies to creative potential.

Problem finding may be more important for creativity than problem solving. In fact, the latter may actually depend on the former in that good solutions may be possible only when they are directed at a good problem.

That being said, Simonton's article, "Varieties of (Scientific) Creativity: A Hierarchical Model of Domain-Specific Disposition, Development, and Achievement," (2009, this issue) begins in a compelling fashion. It clearly identifies several good problems. These are framed as questions, including, "Is the creative thought of an Albert Einstein comparable with that of a Pablo Picasso? Or must we draw the contrary conclusion that there is no such thing as a "one-size-fits-all" creative process? Is the thinking that produced the general theory of relativity fundamentally distinct from that which created a painting like *Guernica*?" (p. xxx).

Simonton then develops an argument about a hierarchy of sciences, which, very significantly, can be applied to the arts and humanities as well. As is typical of his research, Simonton's logic and the data he cites are rigorous and convincing. I was especially intrigued by his testing of Auguste Comte's theory that the sciences vary in a systematic fashion and can be ordered with hierarchy that captures the distinction between the "hard" and "soft" sciences. Simonton goes well beyond the existing hierarchy, however, and breaks all kinds of new ground by extrapolating the hierarchy to the arts and humanities, interpolating it within disciplines, and relating it to family background and disposition.

For the sake of brevity, this commentary focuses on additional questions that are suggested by a careful reading of Simonton's article. The first of these represents a minor concern about labels and wording. Simonton stated that "to be more accurate, the hierarchical placement of sciences shown in Figure 1 should incorporate error bars" (p. xxx). Figure 1 shows different sciences, and his description of their differences is convincing. But error is the wrong

label for what he is describing. Although there is a psychometric tradition that labels unreliable or inexplicable variability as “error,” it can be misleading. What Simonton is describing should be viewed as variability rather than error. It represents individual differences and can be taken as a reminder that creativity and achievement depend on both universals and individual differences.

If I understand Simonton correctly, he is simply acknowledging a statistical fact that means are hypothetical things. They are averages and may not even describe any one individual! Everyone in a sample may in fact be somewhere around the mean (some above, some below). And different distributions will have variations around their respective means, so although the means are apart, large portions of the distributions may overlap. This is very clear in studies of sex differences (Runco, Cramond, & Pagnani, in press), but it applies to an even broader range of subjects. Although most males may do one thing, and have an average at one point, and females may tend to do another thing, and have an average at a different point, most males and females may be similar. In fact, many males may be beyond the female average, and many females may be beyond the male average. This is just a matter of distributions around the mean. It applies to sex differences, cultural differences, or any group differences. Simonton is well aware of it and go on to describe how “each science is placed according to its center of gravity or central tendency, but it is incorrect to assume that all practitioners operate at that mean level. It is probably the case that there is sufficient variation within each discipline that the distributions overlap” (p. xxx). My point here is not with his logic or argument, but merely with the terminology and in particular the word *error*.

As that concern does touch on the debate about universals and individual differences, it is related to the much more important question quoted above about Einstein and Picasso. In particular, it does not follow that if Einstein’s thinking was different from Picasso’s, then there is

no universal creative process. This may sound like a minor point, and certainly it is not a problem with the idea of a hierarchy of the sciences. The problem is that any model or theory built on information about Einstein, Picasso, or other luminaries, should not be interpreted as indicative of everyone else. Granted, there is a good reason to focus on Einstein and Picasso and the others. Their creativity is unambiguous. The problematic implication is that creative talents are not normally distributed and are not universal capacities.

Sticking with the psychometric perspective, this is an issue of generalizability. It is also a reflection of the long-standing criterion problem (Shapiro, 1970). Put briefly, one theory (which relegates universals) might be built if we use fame and high-level creative performance as our criteria, but at the same time there is a tenable theory (which allows universals) constructed from a broader everyday definition or criterion of creativity. Having such varied criteria and theories is not very parsimonious and may be unnecessary. It is much better to have a simple theory that applies to the eminent and the noneminent.

CANDIDATE FOR A CREATIVITY UNIVERSAL

Elsewhere, I have suggested that at least one part of the creative process is universal. I described this as assimilatory and interpretive. Briefly, the idea is that creative things all depend on original interpretations of experience. The experience may be scientific (as in the case of Einstein), visual and emotional (as in the case of Picasso), or even day-to-day. Humans do not understand anything without constructing an interpretation or drawing meaning from long term memory, and the latter is not at all original or creative. It is not even mindful or consciously done. The concept of assimilation is a good way to describe how an individual can consider information (again, be it scientific, artistic, or day-to-day information) and construct an original interpretation. Einstein did this when he thought about riding on a beam of light or train, and

Picasso did it when he observed a woman sleeping (and presumably dreaming)—one of my favorite paintings. This is not all there is to creativity, but assimilation will provide original ideas and interpretations. And everyone can construct original ideas and interpretations. We do not always do so—it is easier to use routine, assumption, and memory if we can get away with it—but we all do have the capacity. It is an example of one universal part of the creative process.

As noted above, an accurate theory of creativity will need to take universals and individual differences into account. Examples of the latter include judgments (e.g., when to put the effort into construction of an original interpretation) and interests (e.g., intrinsic motivation). Clearly high-level creative people are highly motivated. They invest huge amounts of time to developing their talents and to thinking about the topic at hand, be it relativity, cubism, or whatever. They may be extraordinary in their drive and commitment, but just like the rest of us in their capacity to construct original interpretations.

My concern about accurate theories is surely shared by Simonton. As a matter of fact in his article, he expresses a parallel concern about the state of the creative sciences. There is fragmentation and too little integration of the various perspectives on creativity. As he puts it, “What we currently possess is a chaos of miscellaneous puzzle pieces that we hope can be placed together to form a single coherent picture of how the creative process in person might systematically vary across different domains of creativity” (p. xxx). Although I don’t see the idea of domains as playing such a central role in our understanding of the creative process, I certainly understand the concern about what Simonton calls fragmentation.

This same concern led me recently to propose a simple theory of creativity. I began by questioning the assumption that creativity is a syndrome or complex. The view that creativity is a syndrome goes back at least to 1965 and is very broadly accepted (e.g., MacKinnon, 1960/1983;

Mumford & Gustafson, 1988). Creativity is supposedly a syndrome in that there are a number of cognitive requirements (e.g., associative tendencies, divergent thinking fluency, flexibility, originality, and intuition), emotional and motivational influences (e.g., intrinsic interest and determination), personality traits (e.g., openness, wide interests, and autonomy), and contextual factors (e.g., support, resources, benefits, and minimal costs).

Yet research on creativity suggests that there are benefits to questioning assumptions, and the idea of a syndrome has been around so long that it is taken for granted. So while preparing two extensive reviews, I avoided the syndrome assumption, and sure enough, I uncovered a very small set of commonalities—almost like higher order factors in a principle components analysis, only theoretical rather than empirical (Runco, 2007). In this simple theory of creativity, then, creativity boils down to a kind of freedom of thought, which is in turn related to all of those other possible influences and requirements. Freedom of thought is related to the autonomous and unconventional personality tendencies, for example, but is also a reflection of intrinsic (and personal) interests and motivation, as well as ideational flexibility and originality. Empirical tests of this new theory have yet to be conducted. And this is another thing shared with Simonton: the need for empirical tests.

EMPIRICAL HYPOTHESES

Simonton's ideas lead nicely to testable hypotheses about domain differences. In fact, in addition to the tests he himself suggested, much of his reasoning can be used by others to test hypotheses about creativity. Surely, that is a good index of quality scholarship: It leads in a fruitful direction. I have long wondered how to best test a hypothesis from the psychoeconomic theory of creativity (Rubenson & Runco, 1992, 1995), and with Simonton's article, I now see several possibilities. Psychoeconomic theory describes the costs and benefits of creative efforts

as well as the idea of a market to support such efforts. It also explains what has been called “age and the rigidities” (Chown, 1961), which is the tendency of older adults to become less and less flexible. This is a problem for creativity because flexible ideation is one of the best ways to find creative solutions. The psychoeconomic explanation is that older adults have invested a great deal into their routines and personal paradigms, and thus they have a great deal to lose if there is some sort of change or depreciation. This is true of economic investments, and it demonstrates why this line of thought is called *psychoeconomic*. Investments may be financial, but they are also necessary for expertise and a number of psychological influences on the creative process.

The important thing here is that there is a tendency for older adults and persons with large investments (e.g., experts) to protect their investments. For that reason, they may not consider alternatives as frequently or as thoroughly as younger or less experienced persons. This might be tested using some of the indicators identified by Simonton. He lists *consultation rate*, for example, as one of the factors, and psychoeconomic theory would predict that individuals with less invested would consult more frequently than would persons with large investments (and further into their careers). Simonton also lists *citation immediacy*, which might be adapted to test the idea that individuals with less invested will cite a broader range of sources than will persons with more invested. Perhaps the indicators of “scientific status” could also be adapted such that they represent the degree of expertise and investment. These are just three possibilities.

POTENTIAL AND PERFORMANCE

To be thorough, I must underscore that expertise is quite often useful for creative work. There can be a cost or price to it (e.g., rigidity), but there are also potential benefits. I have, then, come the full circle in this commentary. Early on, I voiced my concern over generalizing from eminent individuals to everyone else, and I have returned to the same topic, at least in that

eminent persons are most often also experts with a great deal invested in their work and careers.

There are clear practical implications. Consider, for instance, the fact that although the research on experts and eminent persons is fascinating and compelling, it does not necessarily tell us about the creativity of children or the creativity of an adult whose creativity is only apparent in day to day activities and not in any professional arena. This is not just a limited generalization from the eminent to everyday creativity. There is another side to it, as eminent people already possess everything it takes to actually perform in a creative fashion. If they did not, they would not be eminent, or at least productively and creatively eminent. But many of us may lack something and only have creative potential. The key problem, then, is that studies of actual performances (and individuals already performing) may not help us to understand how mere potential can be fulfilled such that the individual develops what it takes to actually perform in a creative fashion.

I used this distinction between performance and potential in my own modest reorganization of the field of creative studies (Runco, 2007). Briefly, instead of the typical alliterative framework with creative persons, places, processes, and products (and Simonton's [1995] own persuasion), I suggested a hierarchy that has performance and potential at the highest level, with the former divided into products and persuasion and the latter into processes, personality, and places.

With this in mind, from my perspective one of the most important parts of Simonton's article is his conclusion. Though brief, his conclusion makes the following statement

I have put forward three interconnected arguments. The first is that the diverse domains of creative achievement can be arrayed as a hierarchy....That hierarchy was then extrapolated to include the humanities and the arts and interpolated to deal with within-

domain variation. The underlying assumption of the hierarchical arrangement is that domain-specific creativity varies from the logical, objective, formal, and conventional to the intuitive, subjective, emotional, and individualistic. I should probably admit that the assertion that the former disciplines reside at the top and the latter rest at the bottom is totally arbitrary. An artist might reasonably decide to invert the hierarchy, placing poetry at the apex and physics at the base. Indeed, this inversion might be justified if we wish to use originality of creative thought as the primary criterion....” (p. xxx)

Studies of creativity do indeed use originality as the primary criterion. Studies of potential and everyday creativity do this by recognizing the original insights and solutions of noneminent persons, even if those insights and solutions are personal and not socially acknowledged and broadly persuasive. They may be creative only in a person sense. They may be original and useful, but only for the individual. In the conclusion to his article, Simonton’s theory is useful no matter how we approach creativity. Creativity may be associated with expertise, eminence, and actual performance, in which case the hierarchy works as he initially uses it, or it may be associated with potential and a personal kind of effective behavior, which may be artistic or simply self-expressive, in which case the inverted hierarchy may indeed be more appropriate.

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